PCS Scenario A Feb 4, 1994	Base Information	Year 1	Year 2	Year 3
Capital Budgeting Analysis: 15 Year Plan Additional Expenses and Revenues PCS Entry into Local Telephone Service				
Capital Investment Expenses		$4,692,000	$384,000	$1,536,000
Capital Investment Per Target Subscriber	$1,030			
fixed	$70	$70		
variable	$960	$960	$960	$960
ratio	7%			
build–to margin	1.1			
target subscribers	39,600			
		1%	1%	2%
Market Size	200,000	200,000	200,000	200,000
Percent Penetration	18%	1.00%	1.20%	2.00%
Subscribers		2,000	2,400	4,000
Average Price Per Month	$35	$31.00	$31.29	$31.57
Local Tel Discount Factor		0.800	0.814	0.829
Sales Revenue		$744,000	$901,029	$1,515,429
Variable Costs				
Marketing		$1,900,000	$1,900,000	$1,900,000
Customer Service and Maintenance		$136,000	$163,200	$272,000
Interconnection Costs		$192,456	$230,481	$381,024
Depreciation		$349,085	$349,728	$436,028
Total Expenses		$2,577,541	$2,643,408	$2,989,052
Earnings before taxes		($1,833,541)	($1,742,380)	($1,473,623)
Taxes		($715,081)	($679,528)	($574,713)
Net income		($1,118,460)	($1,062,852)	($898,910)
Add back depreciation		$349,085	$349,728	$436,028
Net Cash Flow		($5,461,375)	($1,097,124)	($1,998,882)
Net Present Value (at 14%)	($9,053,472)	($4,790,680)	($5,634,881)	($6,984,070)
Net Present Value (at 18%)	($8,961,524)	($4,628,284)	($5,416,221)	($6,632,803)
Net Present Value (at 14%) per sub	($229)			
Net Present Value (at 18%) per sub	($226)			

PCS Scenario A Feb 4, 1994 Capital Budgeting Analysis: 15 Year Plan Additional Expenses and Revenues PCS Entry into Local Telephone Service	Year 4	Year 5	Year 6	Year 7	Year 8
Capital Investment Expenses	$3,840,000	$3,840,000	$3,840,000	$3,840,000	$1,920,000
Capital Investment Per Target Subscriber					
fixed					
variable	$960	$960	$960	$960	$960
ratio					
build–to margin					
target subscribers					
	4%	6%	8%	10%	11%
Market Size	200,000	200,000	200,000	200,000	200,000
Percent Penetration	4.00%	6.00%	8.00%	10.00%	11.00%
Subscribers	8,000	12,000	16,000	20,000	22,000
Average Price Per Month	$31.86	$32.14	$32.43	$32.71	$33.00
Local Tel Discount Factor	0.843	0.857	0.871	0.886	0.900
Sales Revenue	$3,058,286	$4,628,571	$6,226,286	$7,851,429	$8,712,000
Variable Costs					
Marketing	$1,900,000	$1,900,000	$1,900,000	$1,900,000	$1,900,000
Customer Service and Maintenance	$544,000	$816,000	$1,088,000	$1,360,000	$1,496,000
Interconnection Costs	$746,496	$1,096,416	$1,430,784	$1,749,600	$1,903,176
Depreciation	$686,842	$917,590	$1,129,879	$1,325,185	$1,362,018
Total Expenses	$3,877,338	$4,730,006	$5,548,663	$6,334,785	$6,661,194
Earnings before taxes	($819,052)	($101,435)	$677,623	$1,516,644	$2,050,806
Taxes	($319,430)	($39,560)	$264,273	$591,491	$799,814
Net income	($499,622)	($61,875)	$413,350	$925,153	$1,250,992
Add back depreciation	$686,842	$917,590	$1,129,879	$1,325,185	$1,362,018
Net Cash Flow	($3,652,780)	($2,984,285)	($2,297,118)	($1,589,979)	$692,707
Net Present Value (at 14%)	($9,146,809)	($10,696,753)	($11,743,289)	($12,378,704)	($12,135,869)
Net Present Value (at 18%)	($8,516,866)	($9,821,325)	($10,672,250)	($11,171,384)	($10,987,097)
Net Present Value (at 14%) per sub					
Net Present Value (at 18%) per sub					

PCS Scenario A Feb 4, 1994 Capital Budgeting Analysis: 15 Year Plan Additional Expenses and Revenues PCS Entry into Local Telephone Service	Year 9	Year 10	Year 11	Year 12	Year 13
Capital Investment Expenses	$1,920,000	$1,920,000	$1,920,000	$1,920,000	$1,920,000
Capital Investment Per Target Subscriber fixed variable ratio build–to margin target subscribers	$960	$960	$960	$960	$960
	12%	13%	14%	15%	16%
Market Size	200,000	200,000	200,000	200,000	200,000
Percent Penetration	12.00%	13.00%	14.00%	15.00%	16.00%
Subscribers	24,000	26,000	28,000	30,000	32,000
Average Price Per Month	$33.29	$33.57	$33.86	$34.14	$34.43
Local Tel Discount Factor	0.914	0.929	0.943	0.957	0.971
Sales Revenue	$9,586,286	$10,474,286	$11,376,000	$12,291,429	$13,220,571
Variable Costs					
Marketing	$1,900,000	$1,900,000	$1,900,000	$1,900,000	$1,900,000
Customer Service and Maintenance	$1,632,000	$1,768,000	$1,904,000	$2,040,000	$2,176,000
Interconnection Costs	$2,052,864	$2,198,664	$2,340,576	$2,478,600	$2,612,736
Depreciation	$1,395,905	$1,427,080	$1,455,762	$1,482,149	$1,506,425
Total Expenses	$6,980,769	$7,293,744	$7,600,338	$7,900,749	$8,195,161
Earnings before taxes	$2,605,517	$3,180,542	$3,775,662	$4,390,680	$5,025,411
Taxes	$1,016,152	$1,240,411	$1,472,508	$1,712,365	$1,959,910
Net income	$1,589,366	$1,940,130	$2,303,154	$2,678,315	$3,065,500
Add back depreciation	$1,395,905	$1,427,080	$1,455,762	$1,482,149	$1,506,425
Net Cash Flow	$1,064,979	$1,446,930	$1,838,644	$2,240,200	$2,651,669
Net Present Value (at 14%)	($11,808,380)	($11,418,079)	($10,983,024)	($10,518,050)	($10,035,263)
Net Present Value (at 18%)	($10,746,991)	($10,470,534)	($10,172,823)	($9,865,424)	($9,557,067)
Net Present Value (at 14%) per sub					
Net Present Value (at 18%) per sub					

PCS Scenario A Feb 4, 1994	Year 14	Year 15
Capital Budgeting Analysis: 15 Year Plan Additional Expenses and Revenues PCS Entry into Local Telephone Service		
Capital Investment Expenses	$1,920,000	$1,920,000
Capital Investment Per Target Subscriber		
fixed		
variable	$960	$960
ratio		
build-to margin		1.1
target subscribers		
	17%	18%
Market Size	200,000	200,000
Percent Penetration	17.00%	18.00%
Subscribers	34,000	36,000
Average Price Per Month	$34.71	$35.00
Local Tel Discount Factor	0.986	1.000
Sales Revenue	$14,163,429	$15,120,000
Variable Costs		
Marketing	$1,900,000	$1,900,000
Customer Service and Maintenance	$2,312,000	$2,448,000
Interconnection Costs	$2,742,984	$2,869,344
Depreciation	$1,528,759	$1,549,306
Total Expenses	$8,483,743	$8,766,650
Earnings before taxes	$5,679,686	$6,353,350
Taxes	$2,215,077	$2,477,806
Net income	$3,464,608	$3,875,543
Add back depreciation	$1,528,759	$1,549,306
Net Cash Flow	$3,073,118	$3,504,606
Net Present Value (at 14%)	($9,544,455)	($9,053,472)
Net Present Value (at 18%)	($9,254,215)	($8,961,524)
Net Present Value (at 14%) per sub		
Net Present Value (at 18%) per sub		

PCS Scenario B Feb 4, 1994	Base Information	Year 1	Year 2	Year 3
Capital Budgeting Analysis: 15 Year Plan **Additional Expenses and Revenues** **PCS Entry into Local Telephone Service**				
Capital Investment Expenses		$7,694,880	$629,760	$2,519,040
Capital Investment Per Target Subscriber	$1,030			
fixed	$70	$70		
variable	$960	$960	$960	$960
ratio	7%			
build-to margin	1.1			
target subscribers	64,944			
		1%	1%	2%
Market Size	200,000	200,000	200,000	200,000
Percent Penetration	30%	1.64%	1.97%	3.28%
Subscribers		3,280	3,936	6,560
Average Price Per Month	$35	$31.00	$31.29	$31.57
Local Tel Discount Factor		0.800	0.814	0.829
Sales Revenue		$1,220,160	$1,477,687	$2,485,303
Variable Costs				
Marketing		$1,900,000	$1,900,000	$1,900,000
Customer Service and Maintenance		$223,040	$267,648	$446,080
Interconnection Costs		$313,587	$375,050	$616,718
Depreciation		$572,499	$573,553	$715,086
Total Expenses		$3,009,126	$3,116,251	$3,677,883
Earnings before taxes		($1,788,966)	($1,638,564)	($1,192,580)
Taxes		($697,697)	($639,040)	($465,106)
Net income		($1,091,270)	($999,524)	($727,474)
Add back depreciation		$572,499	$573,553	$715,086
Net Cash Flow		($8,213,650)	($1,055,731)	($2,531,428)
Net Present Value (at 14%)	($9,711,678)	($7,204,957)	($8,017,307)	($9,725,949)
Net Present Value (at 18%)	($10,511,134)	($6,960,721)	($7,718,930)	($9,259,636)
Net Present Value (at 14%) per sub	($150)			
Net Present Value (at 18%) per sub	($162)			

PCS Scenario B Feb 4, 1994 Capital Budgeting Analysis: 15 Year Plan Additional Expenses and Revenues PCS Entry into Local Telephone Service	Year 4	Year 5	Year 6	Year 7	Year 8
Capital Investment Expenses	$6,297,600	$6,297,600	$6,297,600	$6,297,600	$3,148,800
Capital Investment Per Target Subscriber					
fixed					
variable	$960	$960	$960	$960	$960
ratio					
build–to margin					
target subscribers					
	4%	6%	8%	10%	11%
Market Size	200,000	200,000	200,000	200,000	200,000
Percent Penetration	6.56%	9.84%	13.12%	16.40%	18.04%
Subscribers	13,120	19,680	26,240	32,800	36,080
Average Price Per Month	$31.86	$32.14	$32.43	$32.71	$33.00
Local Tel Discount Factor	0.843	0.857	0.871	0.886	0.900
Sales Revenue	$5,015,589	$7,590,857	$10,211,109	$12,876,343	$14,287,680
Variable Costs					
Marketing	$1,900,000	$1,900,000	$1,900,000	$1,900,000	$1,900,000
Customer Service and Maintenance	$892,160	$1,338,240	$1,784,320	$2,230,400	$2,453,440
Interconnection Costs	$1,191,607	$1,724,667	$2,215,899	$2,665,302	$2,874,318
Depreciation	$1,126,420	$1,504,848	$1,853,002	$2,173,303	$2,233,709
Total Expenses	$5,110,187	$6,467,755	$7,753,220	$8,969,005	$9,461,467
Earnings before taxes	($94,598)	$1,123,102	$2,457,888	$3,907,338	$4,826,213
Taxes	($36,893)	$438,010	$958,576	$1,523,862	$1,882,223
Net income	($57,705)	$685,092	$1,499,312	$2,383,476	$2,943,990
Add back depreciation	$1,126,420	$1,504,848	$1,853,002	$2,173,303	$2,233,709
Net Cash Flow	($5,228,885)	($4,107,660)	($2,945,582)	($1,741,094)	$2,028,637
Net Present Value (at 14%)	($12,821,869)	($14,955,259)	($16,297,226)	($16,993,032)	($16,281,875)
Net Present Value (at 18%)	($11,956,636)	($13,752,132)	($14,843,269)	($15,389,842)	($14,850,147)
Net Present Value (at 14%) per sub					
Net Present Value (at 18%) per sub					

PCS Scenario B Feb 4, 1994	Year 9	Year 10	Year 11	Year 12	Year 13
Capital Budgeting Analysis: 15 Year Plan Additional Expenses and Revenues PCS Entry into Local Telephone Service					
Capital Investment Expenses	$3,148,800	$3,148,800	$3,148,800	$3,148,800	$3,148,800
Capital Investment Per Target Subscriber fixed variable ratio build–to margin target subscribers	$960	$960	$960	$960	$960
	12%	13%	14%	15%	16%
Market Size	200,000	200,000	200,000	200,000	200,000
Percent Penetration	19.68%	21.32%	22.96%	24.60%	26.24%
Subscribers	39,360	42,640	45,920	49,200	52,480
Average Price Per Month	$33.29	$33.57	$33.86	$34.14	$34.43
Local Tel Discount Factor	0.914	0.929	0.943	0.957	0.971
Sales Revenue	$15,721,509	$17,177,829	$18,656,640	$20,157,943	$21,681,737
Variable Costs					
Marketing	$1,900,000	$1,900,000	$1,900,000	$1,900,000	$1,900,000
Customer Service and Maintenance	$2,676,480	$2,899,520	$3,122,560	$3,345,600	$3,568,640
Interconnection Costs	$3,072,876	$3,260,978	$3,438,622	$3,605,809	$3,762,539
Depreciation	$2,289,283	$2,340,411	$2,387,449	$2,430,724	$2,470,537
Total Expenses	$9,938,640	$10,400,909	$10,848,631	$11,282,133	$11,701,716
Earnings before taxes	$5,782,869	$6,776,920	$7,808,009	$8,875,810	$9,980,021
Taxes	$2,255,319	$2,642,999	$3,045,123	$3,461,566	$3,892,208
Net income	$3,527,550	$4,133,921	$4,762,885	$5,414,244	$6,087,813
Add back depreciation	$2,289,283	$2,340,411	$2,387,449	$2,430,724	$2,470,537
Net Cash Flow	$2,667,781	$3,325,288	$4,001,298	$4,695,939	$5,409,327
Net Present Value (at 14%)	($15,461,512)	($14,564,536)	($13,617,759)	($12,643,074)	($11,658,201)
Net Present Value (at 18%)	($14,248,680)	($13,613,335)	($12,965,449)	($12,321,074)	($11,692,036)
Net Present Value (at 14%) per sub					
Net Present Value (at 18%) per sub					

PCS Scenario B Feb 4, 1994	Year 14	Year 15
Capital Budgeting Analysis: 15 Year Plan Additional Expenses and Revenues PCS Entry into Local Telephone Service		
Capital Investment Expenses	$3,148,800	$3,148,800
Capital Investment Per Target Subscriber fixed variable ratio build–to margin target subscribers	$960	$960 1.1
	17%	18%
Market Size	200,000	200,000
Percent Penetration	27.88%	29.52%
Subscribers	55,760	59,040
Average Price Per Month	$34.71	$35.00
Local Tel Discount Factor	0.986	1.000
Sales Revenue	$23,228,023	$24,796,800
Variable Costs		
Marketing	$1,900,000	$1,900,000
Customer Service and Maintenance	$3,791,680	$4,014,720
Interconnection Costs	$3,908,812	$4,044,627
Depreciation	$2,507,165	$2,540,862
Total Expenses	$12,107,656	$12,500,209
Earnings before taxes	$11,120,367	$12,296,591
Taxes	$4,336,943	$4,795,670
Net income	$6,783,424	$7,500,920
Add back depreciation	$2,507,165	$2,540,862
Net Cash Flow	$6,141,571	$6,892,771
Net Present Value (at 14%)	($10,677,331)	($9,711,678)
Net Present Value (at 18%)	($11,086,791)	($10,511,134)
Net Present Value (at 14%) per sub Net Present Value (at 18%) per sub		

PCS Scenario C Feb 4, 1994	Base Information	Year 1	Year 2	Year 3
Capital Budgeting Analysis: 15 Year Plan Additional Expenses and Revenues PCS Entry into Local Telephone Service				
Capital Investment Expenses		$4,692,000	$384,000	$1,536,000
Capital Investment Per Target Subscriber	$1,030			
fixed	$70	$70		
variable	$960	$960	$960	$960
ratio	7%			
build–to margin	1.1			
target subscribers	39,600			
		1%	1%	2%
Market Size	200,000	200,000	200,000	200,000
Percent Penetration	18%	1.00%	1.20%	2.00%
Subscribers		2,000	2,400	4,000
Average Price Per Month	$50	$46.00	$46.29	$46.57
Local Tel Discount Factor		0.800	0.814	0.829
Sales Revenue		$1,104,000	$1,333,029	$2,235,429
Variable Costs				
Marketing		$1,900,000	$1,900,000	$1,900,000
Customer Service and Maintenance		$136,000	$163,200	$272,000
Interconnection Costs		$192,456	$230,481	$381,024
Depreciation		$349,085	$349,728	$436,028
Total Expenses		$2,577,541	$2,643,408	$2,989,052
Earnings before taxes		($1,473,541)	($1,310,380)	($753,623)
Taxes		($574,681)	($511,048)	($293,913)
Net income		($898,860)	($799,332)	($459,710)
Add back depreciation		$349,085	$349,728	$436,028
Net Cash Flow		($5,241,775)	($833,604)	($1,559,682)
Net Present Value (at 14%)	$148,856	($4,598,048)	($5,239,480)	($6,292,221)
Net Present Value (at 18%)	($2,111,065)	($4,442,182)	($5,040,864)	($5,990,135)
Net Present Value (at 14%) per sub	$4			
Net Present Value (at 18%) per sub	($53)			

PCS Scenario C Feb 4, 1994	Year 4	Year 5	Year 6	Year 7	Year 8
Capital Budgeting Analysis: 15 Year Plan Additional Expenses and Revenues PCS Entry into Local Telephone Service					
Capital Investment Expenses	$3,840,000	$3,840,000	$3,840,000	$3,840,000	$1,920,000
Capital Investment Per Target Subscriber fixed variable ratio build–to margin target subscribers	$960	$960	$960	$960	$960
	4%	6%	8%	10%	11%
Market Size	200,000	200,000	200,000	200,000	200,000
Percent Penetration	4.00%	6.00%	8.00%	10.00%	11.00%
Subscribers	8,000	12,000	16,000	20,000	22,000
Average Price Per Month	$46.86	$47.14	$47.43	$47.71	$48.00
Local Tel Discount Factor	0.843	0.857	0.871	0.886	0.900
Sales Revenue	$4,498,286	$6,788,571	$9,106,286	$11,451,429	$12,672,000
Variable Costs					
Marketing	$1,900,000	$1,900,000	$1,900,000	$1,900,000	$1,900,000
Customer Service and Maintenance	$544,000	$816,000	$1,088,000	$1,360,000	$1,496,000
Interconnection Costs	$746,496	$1,096,416	$1,430,784	$1,749,600	$1,903,176
Depreciation	$686,842	$917,590	$1,129,879	$1,325,185	$1,362,018
Total Expenses	$3,877,338	$4,730,006	$5,548,663	$6,334,785	$6,661,194
Earnings before taxes	$620,948	$2,058,565	$3,557,623	$5,116,644	$6,010,806
Taxes	$242,170	$802,840	$1,387,473	$1,995,491	$2,344,214
Net income	$378,778	$1,255,725	$2,170,150	$3,121,153	$3,666,592
Add back depreciation	$686,842	$917,590	$1,129,879	$1,325,185	$1,362,018
Net Cash Flow	($2,774,380)	($1,666,685)	($540,318)	$606,021	$3,108,307
Net Present Value (at 14%)	($7,934,876)	($8,800,500)	($9,046,662)	($8,804,473)	($7,714,828)
Net Present Value (at 18%)	($7,421,129)	($8,149,652)	($8,349,803)	($8,159,558)	($7,332,630)
Net Present Value (at 14%) per sub Net Present Value (at 18%) per sub					

PCS Scenario C Feb 4, 1994 Capital Budgeting Analysis: 15 Year Plan Additional Expenses and Revenues PCS Entry into Local Telephone Service	Year 9	Year 10	Year 11	Year 12	Year 13
Capital Investment Expenses	$1,920,000	$1,920,000	$1,920,000	$1,920,000	$1,920,000
Capital Investment Per Target Subscriber					
fixed					
variable	$960	$960	$960	$960	$960
ratio					
build–to margin					
target subscribers					
	12%	13%	14%	15%	16%
Market Size	200,000	200,000	200,000	200,000	200,000
Percent Penetration	12.00%	13.00%	14.00%	15.00%	16.00%
Subscribers	24,000	26,000	28,000	30,000	32,000
Average Price Per Month	$48.29	$48.57	$48.86	$49.14	$49.43
Local Tel Discount Factor	0.914	0.929	0.943	0.957	0.971
Sales Revenue	$13,906,286	$15,154,286	$16,416,000	$17,691,429	$18,980,571
Variable Costs					
Marketing	$1,900,000	$1,900,000	$1,900,000	$1,900,000	$1,900,000
Customer Service and Maintenance	$1,632,000	$1,768,000	$1,904,000	$2,040,000	$2,176,000
Interconnection Costs	$2,052,864	$2,198,664	$2,340,576	$2,478,600	$2,612,736
Depreciation	$1,395,905	$1,427,080	$1,455,762	$1,482,149	$1,506,425
Total Expenses	$6,980,769	$7,293,744	$7,600,338	$7,900,749	$8,195,161
Earnings before taxes	$6,925,517	$7,860,542	$8,815,662	$9,790,680	$10,785,411
Taxes	$2,700,952	$3,065,611	$3,438,108	$3,818,365	$4,206,310
Net income	$4,224,566	$4,794,930	$5,377,554	$5,972,315	$6,579,100
Add back depreciation	$1,395,905	$1,427,080	$1,455,762	$1,482,149	$1,506,425
Net Cash Flow	$3,700,179	$4,301,730	$4,913,044	$5,534,200	$6,165,269
Net Present Value (at 14%)	($6,576,994)	($5,416,629)	($4,254,117)	($3,105,444)	($1,982,937)
Net Present Value (at 18%)	($6,498,402)	($5,676,494)	($4,880,979)	($4,121,578)	($3,404,633)
Net Present Value (at 14%) per sub					
Net Present Value (at 18%) per sub					

PCS Scenario C Feb 4, 1994	Year 14	Year 15
Capital Budgeting Analysis: 15 Year Plan Additional Expenses and Revenues PCS Entry into Local Telephone Service		
Capital Investment Expenses	$1,920,000	$1,920,000
Capital Investment Per Target Subscriber		
fixed		
variable	$960	$960
ratio		
build–to margin		1.1
target subscribers		
	17%	18%
Market Size	200,000	200,000
Percent Penetration	17.00%	18.00%
Subscribers	34,000	36,000
Average Price Per Month	$49.71	$50.00
Local Tel Discount Factor	0.986	1.000
Sales Revenue	$20,283,429	$21,600,000
Variable Costs		
Marketing	$1,900,000	$1,900,000
Customer Service and Maintenance	$2,312,000	$2,448,000
Interconnection Costs	$2,742,984	$2,869,344
Depreciation	$1,528,759	$1,549,306
Total Expenses	$8,483,743	$8,766,650
Earnings before taxes	$11,799,686	$12,833,350
Taxes	$4,601,877	$5,005,006
Net income	$7,197,808	$7,828,343
Add back depreciation	$1,528,759	$1,549,306
Net Cash Flow	$6,806,318	$7,457,406
Net Present Value (at 14%)	($895,900)	$148,856
Net Present Value (at 18%)	($2,733,878)	($2,111,065)
Net Present Value (at 14%) per sub		
Net Present Value (at 18%) per sub		

PCS Scenario D Feb 4, 1994	Base Information	Year 1	Year 2	Year 3
Capital Budgeting Analysis: 15 Year Plan Additional Expenses and Revenues PCS Entry into Local Telephone Service				
Capital Investment Expenses		$7,694,880	$629,760	$2,519,040
Capital Investment Per Target Subscriber	$1,030			
fixed	$70	$70		
variable	$960	$960	$960	$960
ratio	7%			
build–to margin	1.1			
target subscribers	64,944			
		1%	1%	2%
Market Size	200,000	200,000	200,000	200,000
Percent Penetration	30%	1.64%	1.97%	3.28%
Subscribers		3,280	3,936	6,560
Average Price Per Month	$50	$46.00	$46.29	$46.57
Local Tel Discount Factor		0.800	0.814	0.829
Sales Revenue		$1,810,560	$2,186,167	$3,666,103
Variable Costs				
Marketing		$1,900,000	$1,900,000	$1,900,000
Customer Service and Maintenance		$223,040	$267,648	$446,080
Interconnection Costs		$313,587	$375,050	$616,718
Depreciation		$572,499	$573,553	$715,086
Total Expenses		$3,009,126	$3,116,251	$3,677,883
Earnings before taxes		($1,198,566)	($930,084)	($11,780)
Taxes		($467,441)	($362,733)	($4,594)
Net income		($731,126)	($567,352)	($7,186)
Add back depreciation		$572,499	$573,553	$715,086
Net Cash Flow		($7,853,506)	($623,558)	($1,811,140)
Net Present Value (at 14%)	$5,380,141	($6,889,041)	($7,368,849)	($8,591,317)
Net Present Value (at 18%)	$723,619	($6,655,514)	($7,103,344)	($8,205,660)
Net Present Value (at 14%) per sub	$83			
Net Present Value (at 18%) per sub	$11			

PCS Scenario D Feb 4, 1994 Capital Budgeting Analysis: 15 Year Plan Additional Expenses and Revenues PCS Entry into Local Telephone Service	Year 4	Year 5	Year 6	Year 7	Year 8
Capital Investment Expenses	$6,297,600	$6,297,600	$6,297,600	$6,297,600	$3,148,800
Capital Investment Per Target Subscriber					
fixed					
variable	$960	$960	$960	$960	$960
ratio					
build–to margin					
target subscribers					
	4%	6%	8%	10%	11%
Market Size	200,000	200,000	200,000	200,000	200,000
Percent Penetration	6.56%	9.84%	13.12%	16.40%	18.04%
Subscribers	13,120	19,680	26,240	32,800	36,080
Average Price Per Month	$46.86	$47.14	$47.43	$47.71	$48.00
Local Tel Discount Factor	0.843	0.857	0.871	0.886	0.900
Sales Revenue	$7,377,189	$11,133,257	$14,934,309	$18,780,343	$20,782,080
Variable Costs					
Marketing	$1,900,000	$1,900,000	$1,900,000	$1,900,000	$1,900,000
Customer Service and Maintenance	$892,160	$1,338,240	$1,784,320	$2,230,400	$2,453,440
Interconnection Costs	$1,191,607	$1,724,667	$2,215,899	$2,665,302	$2,874,318
Depreciation	$1,126,420	$1,504,848	$1,853,002	$2,173,303	$2,233,709
Total Expenses	$5,110,187	$6,467,755	$7,753,220	$8,969,005	$9,461,467
Earnings before taxes	$2,267,002	$4,665,502	$7,181,088	$9,811,338	$11,320,613
Taxes	$884,131	$1,819,546	$2,800,624	$3,826,422	$4,415,039
Net income	$1,382,871	$2,845,956	$4,380,464	$5,984,916	$6,905,574
Add back depreciation	$1,126,420	$1,504,848	$1,853,002	$2,173,303	$2,233,709
Net Cash Flow	($3,788,309)	($1,946,796)	($64,430)	$1,860,346	$5,990,221
Net Present Value (at 14%)	($10,834,300)	($11,845,404)	($11,874,758)	($11,131,294)	($9,031,368)
Net Present Value (at 18%)	($10,159,627)	($11,010,590)	($11,034,457)	($10,450,447)	($8,856,820)
Net Present Value (at 14%) per sub					
Net Present Value (at 18%) per sub					

PCS Scenario D Feb 4, 1994 Capital Budgeting Analysis: 15 Year Plan Additional Expenses and Revenues PCS Entry into Local Telephone Service	Year 9	Year 10	Year 11	Year 12	Year 13
Capital Investment Expenses	$3,148,800	$3,148,800	$3,148,800	$3,148,800	$3,148,800
Capital Investment Per Target Subscriber					
fixed					
variable	$960	$960	$960	$960	$960
ratio					
build–to margin					
target subscribers					
	12%	13%	14%	15%	16%
Market Size	200,000	200,000	200,000	200,000	200,000
Percent Penetration	19.68%	21.32%	22.96%	24.60%	26.24%
Subscribers	39,360	42,640	45,920	49,200	52,480
Average Price Per Month	$48.29	$48.57	$48.86	$49.14	$49.43
Local Tel Discount Factor	0.914	0.929	0.943	0.957	0.971
Sales Revenue	$22,806,309	$24,853,029	$26,922,240	$29,013,943	$31,128,137
Variable Costs					
Marketing	$1,900,000	$1,900,000	$1,900,000	$1,900,000	$1,900,000
Customer Service and Maintenance	$2,676,480	$2,899,520	$3,122,560	$3,345,600	$3,568,640
Interconnection Costs	$3,072,876	$3,260,978	$3,438,622	$3,605,809	$3,762,539
Depreciation	$2,289,283	$2,340,411	$2,387,449	$2,430,724	$2,470,537
Total Expenses	$9,938,640	$10,400,909	$10,848,631	$11,282,133	$11,701,716
Earnings before taxes	$12,867,669	$14,452,120	$16,073,609	$17,731,810	$19,426,421
Taxes	$5,018,391	$5,636,327	$6,268,707	$6,915,406	$7,576,304
Net income	$7,849,278	$8,815,793	$9,804,901	$10,816,404	$11,850,117
Add back depreciation	$2,289,283	$2,340,411	$2,387,449	$2,430,724	$2,470,537
Net Cash Flow	$6,989,509	$8,007,160	$9,043,314	$10,098,099	$11,171,631
Net Present Value (at 14%)	($6,882,038)	($4,722,157)	($2,582,351)	($486,399)	$1,547,613
Net Present Value (at 18%)	($7,280,993)	($5,751,109)	($4,286,824)	($2,901,168)	($1,602,044)
Net Present Value (at 14%) per sub					
Net Present Value (at 18%) per sub					

PCS Scenario D Feb 4, 1994	Year 14	Year 15
Capital Budgeting Analysis: 15 Year Plan Additional Expenses and Revenues PCS Entry into Local Telephone Service		
Capital Investment Expenses	$3,148,800	$3,148,800
Capital Investment Per Target Subscriber		
fixed		
variable	$960	$960
ratio		
build–to margin		1.1
target subscribers		
	17%	18%
Market Size	200,000	200,000
Percent Penetration	27.88%	29.52%
Subscribers	55,760	59,040
Average Price Per Month	$49.71	$50.00
Local Tel Discount Factor	0.986	1.000
Sales Revenue	$33,264,823	$35,424,000
Variable Costs		
Marketing	$1,900,000	$1,900,000
Customer Service and Maintenance	$3,791,680	$4,014,720
Interconnection Costs	$3,908,812	$4,044,627
Depreciation	$2,507,165	$2,540,862
Total Expenses	$12,107,656	$12,500,209
Earnings before taxes	$21,157,167	$22,923,791
Taxes	$8,251,295	$8,940,278
Net income	$12,905,872	$13,983,512
Add back depreciation	$2,507,165	$2,540,862
Net Cash Flow	$12,264,019	$13,375,363
Net Present Value (at 14%)	$3,506,300	$5,380,141
Net Present Value (at 18%)	($393,438)	$723,619
Net Present Value (at 14%) per sub		
Net Present Value (at 18%) per sub		

6 BOC ENTRY INTO ADJACENT COMPETITIVE MARKETS: OBSTACLES TO EFFECTIVE REGULATION

In Chapter 2, we identified and discussed the sources of BOC market power in core monopoly services that will enable the BOCs to leverage that monopoly into adjacent markets that could otherwise operate under effectively competitive conditions. This BOC market power and the opportunities it affords the dominant local carriers can operate to prevent effective competition from developing in parts of the local market that might otherwise be capable of sustaining entry. Proponents of removing *MFJ* restrictions on BOC entry persist in claiming that regulation and "structural safeguards" will be sufficient to protect adjacent markets and to promote the development of competition in local markets. However, these same proponents of "regulatory safeguards" (primarily the BOCs) are also the most ardent advocates of diminished regulation and increased "regulatory flexibility."

While one might imagine a regime of substantive and enforceable safeguards directed precisely at preventing the BOCs from extending their core monopoly into competitive and potentially competitive adjacent markets, such a regime would necessarily *expand* the current scope and responsibility of the telecommunications regulatory process in ways that will be far less efficient and effective than through retention of line-of-business restrictions — *if those restrictions are removed prior to the development of effective competition in local exchange markets*. To understand this point, one need only examine a few of the many devices and stratagems that are available to — and that have been effectively utilized by — the BOCs to gain unfair advantage over competitors, both in new, adjacent markets they seek to enter and in the local exchange markets that others seek to enter.

In this chapter, we explore some of the key devices available to the LECs, namely some of the various opportunities for cross-subsidization in competitive and potentially competitive adjacent markets and in segments of local exchange markets flowing from the LECs' core monopoly services. In Chapter 7, we examine a number of additional strategies and tactics which provide the LECs with a fully-equipped arsenal of potential responses to entry in local exchange markets and ample funding for LEC entry into adjacent markets.

6.1 Identifying and quantifying cross-subsidization

In order to develop and advance its competitive position, a regulated telephone company has both the economic incentive to sell products in competitive markets at a price that may be below cost, *as well as the ability* to make up the shortfall through excessive prices and profits obtained in markets in which legal or *de facto* monopoly is maintained. Thus, BOC entry into adjacent markets can be facilitated if the local exchange monopoly is able to generate revenues from the provision of its core monopoly services that can be utilized to finance such entry and/or to respond to the entry in segments of the local exchange market. Moreover, to the extent that resources acquired in the course of providing core monopoly services can be utilized by a BOC to furnish the competitive service at less than the price that such assets would command if purchased on a stand-alone basis, the integrated firm will have a decided edge over any competitors. Such tactics constitute forms of *cross-subsidization* flowing from the BOC's core monopoly services to the competitive activity in the adjacent market.

Identification and, more significantly, *quantification* of cross subsidy flows is, however, quite difficult to do in practice. There are several reasons why this is the case. As an example, there is substantial disagreement regarding precisely what actions constitute "cross-subsidization." The term "cost" in the context of cross-subsidy is not clearly defined, and a BOC's ability to price "below cost" is itself facilitated by the fundamental lack of a firm definition of "cost" as an economic concept. The BOCs have sought to portray "cross-subsidization" as pricing below short run marginal cost[177].

However, the local exchange telephone business is characterized by extremely high fixed costs and low (or in some cases near-zero) variable costs; indeed, as new digital and fiber optic technology increases the economic size of switching and transmission systems, the fixed cost component of total LEC plant is far greater today than it was, for example, at the time of divestiture. A short run marginal cost test is not particularly useful or applicable for industries characterized by low product-specific variable costs. In the case of local telephone service, most costs are in fact fixed over a broad range of output and mix of services, because the same fixed common stock of capital is used to produce a spectrum of services ranging from highly monopolistic to highly competitive. For these reasons, economists argue that the average incremental costs of *the entire service* is the correct standard for establishing the absence (or existence of) cross-subsidy for local

177. This is similar to what is frequently referred to as the *Areeda-Turner* test. See, Areeda, Phillip and Donald F. Turner, "Predatory Pricing and Related Practices Under Section 2 of the Sherman Act," *88 Harvard Law Review* 697 (1975), at 733.

telephone services, rather than the marginal (or average variable) cost measures.[178] Unlike marginal costs, the average incremental cost for the entire service includes fixed costs incurred for the service in question, and as a general rule, LEC measures of marginal or incremental cost will fall well below TSLRIC.[179]

Another problem with the incremental cost standard for detecting cross-subsidy as adopted by many state utility commissions is that this approach focuses upon the competitive, adjacent market activity that is or that might be the *recipient* of the subsidy, rather than on the monopoly, core service that may be the *source* of support for the subsidized competitive offering. In contrast, cross-subsidization may occur without the competitive service priced dramatically below the competition's price, as is the case in predatory pricing. The competitive service may simply fail to generate profits, which are then replaced by higher prices for captive local exchange service customers. The capital investments necessary to provide additional capacity for the competitive services are financed through, and subsequently generate a rate-of-return through local exchange service rates. In addition, cross-subsidized prices may persist over the long-term. As Averch and Johnson point out:

> ...this [cross-subsidization] is unlike the textbook case of "predatory price-cutting" where the regulated monopolist may temporarily cut prices in outside competitive markets to drive out rivals and subsequently raise prices to monopoly levels. The monopolist would ordinarily engage in such a practice only if he had the expectation that in the long run he would make a positive profit in these additional markets; but here even in the case of a long-run loss the regulated firm may find operations in such markets to be advantageous as long as the firm is permitted to include its capital input in these markets in its rate base.[180]

The result of equating cross-subsidization with the marginal cost definition of predatory pricing is that a competitive service is, by definition, *not being subsidized by any other service or activity* as long as the price *of that competitive service itself* is set in excess of its own cost, however that may be defined. The fact that customers of some other service, e.g., a core monopoly basic local exchange telephone service, may be required to pay more

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178. *See* Baumol, William J., "Deregulation and Residual Regulation of Local Telephone Service," AEI Studies in Telecommunications Deregulation, presented March 3, 1993, Chapter V, at 48-58. The average incremental cost for the entire service (also referred to as total service long run incremental cost or "TSLRIC") is defined as the difference in the firm's total costs with and without that particular service being supplied, divided by the output of that service, whereas the marginal cost is the increase in the firm's total costs resulting from a small increase in the output of the service.

179. *Id.*

180. Averch, Harvey and Leland Johnson, "Behavior of the Firm Under Regulatory Constraint," *American Economic Review* 52 (December 1962), at 1058.

than they otherwise would absent the existence of the non-core service is, under this construct, essentially irrelevant. At the very least, this one-sided approach to the identification (and ostensibly the prevention) of cross-subsidization diverts attention away from actions by the BOCs whose effect is to elevate the costs — and hence the prices — of core monopoly services. In practice, however, this device has produced massive and pervasive cross-subsidies that no existing accounting or cost allocation rules or standards are even remotely equipped to identify, let alone to remedy.

6.2 Sources of cross-subsidization

In the context of protecting markets from unfair BOC dominance, a suitable working definition of "cross-subsidization" would be *any action taken by a BOC that confers benefit upon its activity in an adjacent market, where the BOC's ability to do so results directly from, and is uniquely attributable to, its core local exchange service monopoly*. Such cross-subsidization actions may be further classified into two categories:

(1) Benefits directed at adjacent market activities that do not result in higher prices or produce other disadvantage to customers of the BOC's core monopoly local exchange services; and

(2) Benefits directed at adjacent market activities that do result in higher prices or that otherwise disadvantage customers of the BOC's core monopoly local exchange services.

Both of these cases have the potential to disadvantage the BOC's *competitors* in the adjacent markets, notwithstanding their impact (or lack thereof) upon users of the BOC's core monopoly services.

Gains from joint production

Category (1) consists of cases in which the joint provision of core monopoly and adjacent market competitive services permits the BOC to realize benefits from real economies of integration (economies of scope), i.e., the joint cost of producing both services together is less than it would be were the two services produced through entirely separate production processes, each one of which utilizing its own set of non-shared resources. Exploitation of synergies in production is beneficial both to the firm and to the economy generally and, all other things being equal, ought to be encouraged. Indeed, the arbitrary interposition of regulatory or other legal barriers to such joint production can result in deadweight economic losses. Elimination of line-of-business restrictions is not, however, the only means by which economies of scope can be realized. Gains from joint

production can also be achieved if access to the common resource is "sold" by its owner to one or more firms which can then incorporate it into their own production activity. For example, there is an economy of scope in BOC billing and collection services, because it costs much less, incrementally, for a BOC to record call details, bill and collect payments from customers of interexchange carriers than for those carriers to replicate a billing and collection activity of their own. Thus, provided that the BOC's price for access to its billing and collection functions is reasonable, the benefits of joint production (i.e., billing both local and long distance services together) can be fully achieved just as if the two services were furnished by a single firm.[181] With respect to joint production activities in this category, then, the operative question is not so much whether they should be permitted — they should — but how the gains from joint production should best be accomplished and apportioned among the participating activities.

If all of the gains from the joint production are directed to the adjacent market activities, competitors in that market without access to similar joint production opportunities will be placed at a serious disadvantage vis-à-vis the BOC's entry. Moreover, a strong argument can be made that customers of the core monopoly services are in fact *entitled* to gain from joint production, because they (and the regulatory process under which those assets were acquired by the BOC) effectively underwrote the investment through which the joint production gains arise.

Investors in the local telephone utility are entitled to a fair (competitive) return on their investment in the LEC's plant. Traditionally, "return" for this purpose is determined by first subtracting from total operating revenues all current operating expenses and current depreciation charges on fixed capital assets to produce "net operating income." To determine the earnings applicable to *equity* investors, fixed interest charges are also subtracted from the net operating income. To the extent that the equity investor also realizes other benefits from the LEC's capital base, such as gains from joint production of core monopoly and adjacent market competitive services, such gains should rightfully be included as part of the overall investor return. Indeed, all other things being equal, if there were two otherwise identical LECs except that one provided its equity owners with gains from joint production and the other did not (because it did not participate in any adjacent market activities), the first firm would be valued more highly by investors, and such gains would clearly be included when assessing the overall worth of the first LEC's securities.

The question of allocation of gains resulting from joint production has in fact been considered by the FCC and by several state PUCs. In its "cost allocation" ruling in CC

181. Ironically, if removal of *MFJ* line-of-business restrictions incented BOCs to refuse to make strategic resources available to competing firms once allowed into the competing firms line of business, removal of these restrictions could actually create new deadweight losses rather than eliminate any that might presently exist.

Docket 86-111,[182] the FCC established the principle that transfers of assets from the regulated portion of a LEC to an unregulated division or corporate affiliate should be made at the greater of book cost or current market value, and that transfers in the opposite direction (i.e., from the non-regulated activity to the regulated activity) should be effected at the *lesser* of book cost or market value.[183] This principle should in theory result in the assignment of all benefits of joint production to the regulated entity. In practice, however, the rule does not appear to have had this effect. For one thing, the rule has been applied primarily to transfers of *book assets* between the regulated and non-regulated entities; its application to transfers of *non-book assets* and *services* has been far less consistent. Consequently, by restricting transfers to *services* rather than to the assets through which such services are furnished, the BOCs may have effectively circumvented the FCC's objectives.

The California Public Utilities Commission (CPUC) has adopted explicit "affiliate transaction" rules that embrace a principle known as "ratepayer indifference."[184] Here, the Commission would permit the gains from joint production to flow entirely to the non-regulated adjacent market activity provided only that ratepayers of core monopoly regulated services are made no worse off by virtue of the affiliate relationship. On the other hand, where ratepayer participation in funding the development of the adjacent market activity can be demonstrated, the CPUC has followed the principle of "reward follows risk" and has directed that gains from the non-regulated adjacent market activity flow (in part or in whole) to core service ratepayers.[185]

Moving from principle to practice is not without difficulty, and has consumed substantial amounts of effort and resources of regulatory bodies that have attempted to address this issue. This is due in part of an explosion of corporate units within each of the seven RBHCs since their formation (see Figure 6.1, which depicts the Pacific Telesis Group corporate structure as of early 1993, before the spin-off of its wireless services affiliates), with resource shifts and other transactions often being extremely difficult to identify in building a factual record.

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182. Separation of Costs of Regulated Telephone Service from Costs of Nonregulated Activities, CC Docket 86-111, 2 FCC Rec. 1298, 1312 (1987), *recon.* 2 FCC Rec. 6283 (1987), *further recon.* 3 FCC Rec.6701 (1988).

183. 47 CFR 31.101-11(b) and (c), Separation of Costs of Regulated Telephone Service from Costs of Nonregulated Activities, CC Docket 86-111, 2 FCC Rec. 1298, 1312 (1987), *recon.* 2 FCC Rec. 6283 (1987), *further recon.* 3 FCC Rec.6701 (1988).

184. California Public Utilities Commission, Case No. 86-11-028, D. 87-12-067, *Second Interim Opinion on Pacific Bell's Revenue Requirement*, 27 CPUC 2d, at 136.

185. California Public Utilities Commission, *Pacific Bell Information Services*, D.92-07-072, July 22, 1992, at 44.

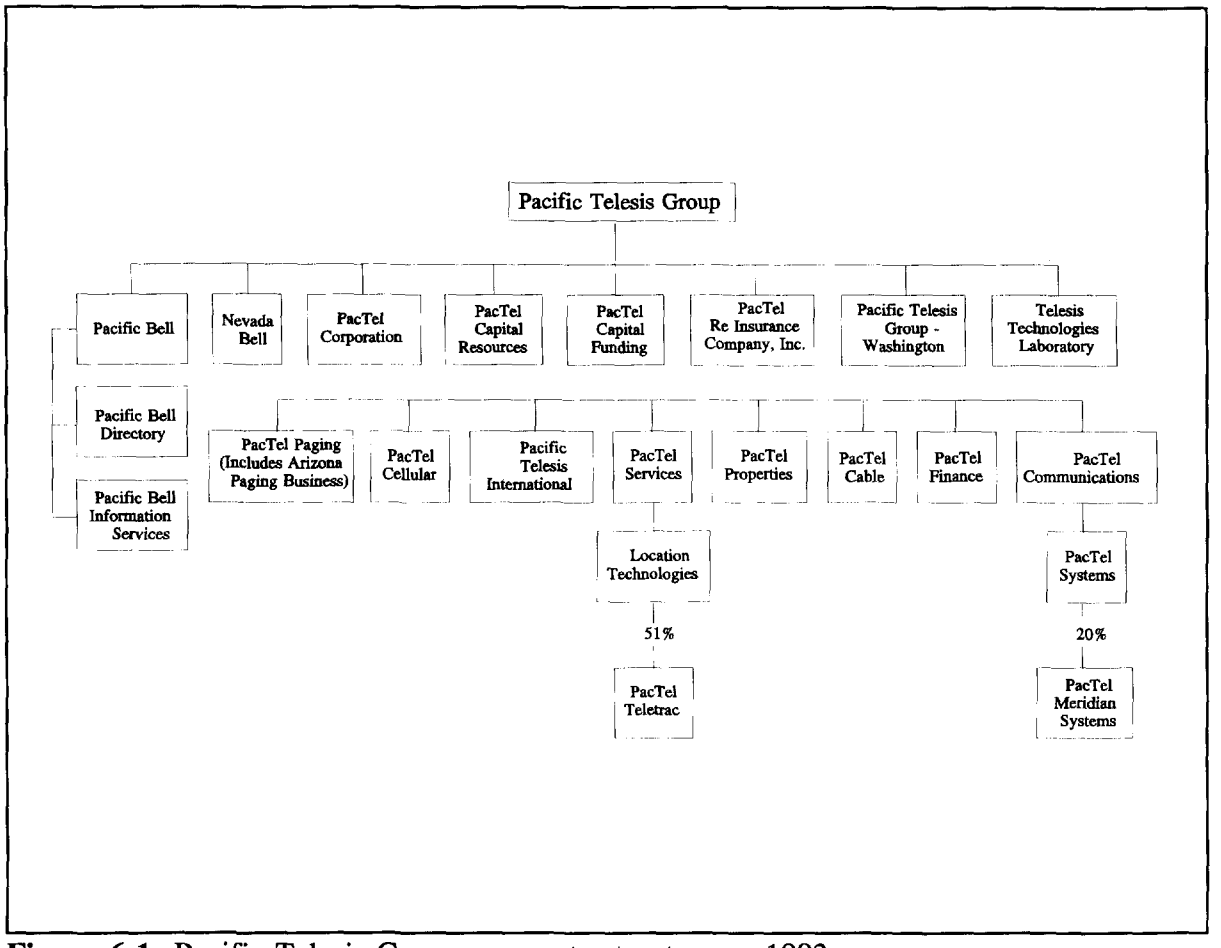

Figure 6.1 Pacific Telesis Group corporate structure — 1993

Benefits to the adjacent market that directly disadvantage core monopoly service customers

There are, in fact, a large number of situations in which actions pursued by BOCs and/or their corporate affiliates for purposes of benefitting or gaining competitive advantage in an adjacent market have the effect of imposing costs and/or other burdens upon customers of the BOC's core monopoly services. While some net economy of scope may still exist in these cases, from the perspective of BOC and RBHC management its import is at best secondary to the opportunity arising from the direct transfer of resources.

It is often rather difficult, however, to trace precisely the manner in which shareholder benefits translate into ratepayer burdens, because so much of the joint activity does not involve formal book entries or specific events that occur during the same accounting period. The potential impact of co-mingling monopoly and competitive activities upon core

services ratepayers is of considerable concern to regulators: In terms of its effect upon competition in adjacent markets it probably makes little difference whether a benefit directed at an adjacent market activity does or does not happen also to burden monopoly services customers. Certainly the present standard for *MFJ* line-of-business relief — no substantial possibility of reducing competition in the adjacent market(s) — does not concern itself directly with the matter of monopoly ratepayer impact.

Legislative reform of the telecommunications regulatory process and market structure cannot, however, ignore this issue, even if the courts have chosen to do so. Even under existing regulatory systems, it is extremely difficult to identify and to remedy the numerous ways in which ratepayers are or might be burdened as regulatory assets are diverted to non-regulated competitive market lines of business; increased regulatory "flexibility" will only make the problem more intractable. Regulation thus cannot hope to achieve the result that was crafted in the *MFJ*, which simply and straightforwardly eliminated both the means and the motives for such behavior.

6.3 Forms of implicit economic cross-subsidization

Any discussion of cross-subsidization in a regulated public utility industry must be made in the context of the regulatory processes and practices to which such companies are subject. Through the use of a variety of affiliate relationships and transactions, there are in fact a number of specific devices that can accomplish *de facto* economic cross-subsidization of adjacent market competitive business activity. (The table on the following page defines several key terms and concepts which should be defined for purposes of the present discussion)

Two broad categories of cross-subsidization can be identified. *Inter-temporal* cross-subsidies flow *between different accounting periods*, usually from monopoly lines of business in earlier time periods to competitive, adjacent market activities in later ones. Through these types of cost shifts, BOCs can accumulate valuable resources ranging from physical assets through such intangibles as brand identification, know-how, trained personnel, licenses, patents, and advance knowledge of infrastructure development plans.

A second broad category of cross-subsidies results from resource shifts, within the same accounting period that are not recorded (or properly recorded) as transactions on the BOCs' books. These *other non-book cross-subsidy flows* result in a flow of value from the monopoly to the competitive category. While we have sought to classify the various forms of cross-subsidy into these two categories, there is undoubtedly considerable overlap.

Definitions

Regulatory asset: A tangible or intangible resource, whether or not expressly recorded on the BOC's books, whose acquisition was funded in whole or in substantial part through expense, investment recovery, or other charges imposed upon ratepayers as part of the "revenue requirement" determined to be applicable for core monopoly local exchange telephone services.

Book asset: Tangible property recorded on the BOC's books of account as a capital asset, subject to annual depreciation (with the exception of land), and upon which (under rate of return regulation) return on investment is calculated.

Rate base: The net book value of all tangible capital assets used and useful in the production of core monopoly and other "above-the-line" services furnished by the BOC subject to state and federal regulation.

Non-book asset: Any property (tangible or intangible) possessing value either as a marketable item (e.g., a license or a patent) or as a component of a going business (e.g., know-how, trained personnel, customer lists, goodwill, brand identification, etc.) the acquisition and/or development cost of which was funded in whole or in substantial part through expense or other charges imposed upon ratepayers as part of the "revenue requirement" determined to be applicable for core monopoly local exchange telephone and other "above-the-line" services.

Revenue requirement: The aggregate amount of jurisdictional revenue required in order for the BOC to earn the authorized rate of return after reimbursement for operating expenses and depreciation on its capital assets.

Above-the-line: Revenues, expenses and other accounting entries collectively forming the regulatory revenue requirement of the BOC.

Below-the-line. Revenues, expenses and other accounting entries recorded on the BOC's books but expressly excluded from the regulatory revenue requirement of the BOC, by regulatory decree or for other reasons.

The following examples provided in the table below highlight key forms of cross-